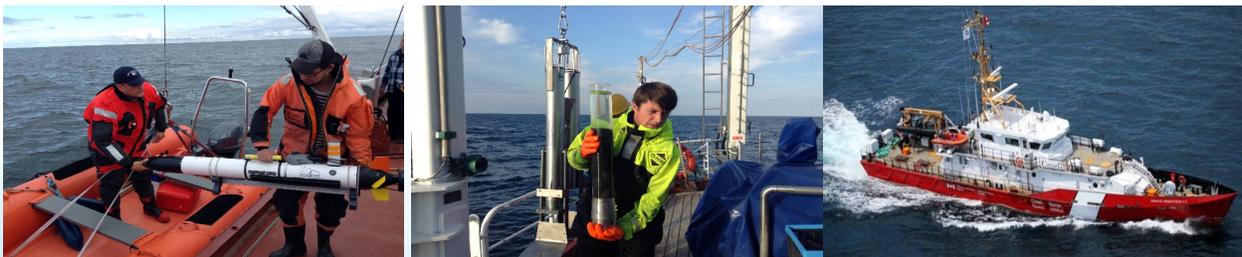


# **INTERNATIONAL DIALOGUE ON UNDERWATER MUNITIONS**

**June 2020  
ORGANIZATIONAL PROFILE**



*Our oceans, seas, and waterways have become junkyards for discarded military munitions. These “silent killers” pollute the marine environment affecting the ocean in ways we are only beginning to understand. There is a need to clean. The wellbeing of present and future generations is inextricably linked to the health and productivity of the ocean.*

*Join us in dialogue.*

## **Table of Contents**

<b><i>About Us</i></b> .....	<b>3</b>
<b><i>The Problem of Underwater Munitions</i></b> .....	<b>4</b>
<b><i>International Scientific Advisory Board (ISTAB)</i></b> .....	<b>8</b>
<b><i>Global Cooperation: Activities and Achievements</i></b> .....	<b>18</b>
<b>International Dialogues</b> .....	<b>18</b>
<b>United Nations</b> .....	<b>19</b>
<b>Organization for the Prohibition of Chemical Weapons</b> .....	<b>22</b>
<b>NATO</b> .....	<b>23</b>
<b>Decision Aid for Maritime Solutions (DIAMON)</b> .....	<b>25</b>
<b>CHEMSEA Chemical Munitions Search &amp; Assessment</b> .....	<b>27</b>
<b>Helsinki Commission for the Protection of the Baltic Sea (HELCOM)</b> .....	<b>28</b>
<b>OSPAR Commission for the Prohibition of the North-East Atlantic     Oceans</b> .....	<b>29</b>
<b>International Seabed Authority (ISA) for Law of the Sea</b> .....	<b>30</b>
<b><i>Public Awareness</i></b> .....	<b>31</b>
<b><i>Funding</i></b> .....	<b>33</b>

## **About Us**

International Dialogue on Underwater Munitions (IDUM) was founded in Canada in 2004 and established in 2014 as a foundation in the Netherlands to see the removal of sea-dumped munitions from our oceans, seas, and waterways. IDUM is a *dialogue* wherein all stakeholders (governments, private sector, community organizations, and others) can discuss in an open and transparent process science, technology, and policy responses to underwater munitions.

### ***Our Mission***

Our mission is to promote the adoption of a binding international treaty to clean up underwater munitions from our oceans and to address their human health and environmental impact.

### ***Our Goals***

- Raise awareness of the human health and environmental impact of underwater munitions
- Develop of a global database of underwater munition sites
- Develop a repository of information for underwater munitions
- Promote a binding international treaty addressing underwater munitions
- Eradicate “point-source emitters of pollution”

### ***Our Work***

IDUM has successfully hosted five *International Dialogues* on underwater munitions related issues. Our work is recognized by international organizations such as the United Nations and the Organization for Prohibition of Chemical Weapons. IDUM is also active in collaborative research in a wide range of fields (including oceanography, ecology, toxicology, technology, risk assessment history, and history).

## The Problem of Underwater Munitions



Sea Dumped Chemical Munition Sites off Nova Scotia, Canada (IDUM Photo)

### ***Our Oceans are a Junkyard for Discarded Military Munitions***

Surplus and damaged munitions were dumped at sea by the militaries of almost every industrialized nation from the late 1910s to the mid-1970s.<sup>1</sup> The United States, the United Kingdom, France, and the Soviet Union deposited of confiscated German weapons by sea dumping after the second world war.<sup>2</sup> Japan also dumped weapons off its coasts.<sup>3</sup> Sea dumping was believed to be one of the safest and most cost-effective ways to dispose of munitions.<sup>4</sup>

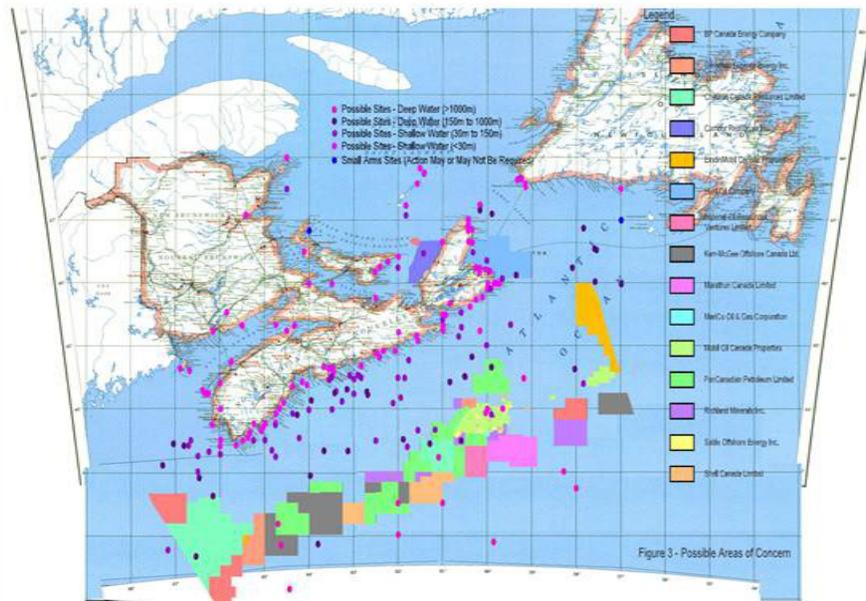
---

<sup>1</sup> Alex Souchen, Underwater Munitions and the Pollution of Military Activities, NICHE, 30 January 2020, <https://niche-canada.org/2020/01/30/underwater-munitions-and-the-pollution-of-military-activities/>. See also US Department of Defense, US Army Research, Development and Engineering Command, Historical Research and Response Team, *Offshore Disposal of Chemical Agents and Weapons Conducted by the United States*, Historical Database No. 26 (2001).

<sup>2</sup> Joshua Newman & Dawn Verdugo, *Building Awareness of Sea-Dumped Chemical Munitions* in KERSTEN VIGNARD, JANE LINEKAR (eds.), *MARITIME SECURITY* 45-46 (2010); Tine Missiaen & Jean-Pierre Henriët (eds.), *Chemical Munition Dump Sites in Coastal Environments: a border-transgressing problem*, Belgian Federal Office for Scientific, Technical and Cultural Affairs (OSTC) (2002).

<sup>3</sup> Joshua Newman & Dawn Verdugo, *Building Awareness of Sea-Dumped Chemical Munitions* in KERSTEN VIGNARD, JANE LINEKAR (eds.), *MARITIME SECURITY* 46 (2010).

<sup>4</sup> US NATIONAL ACADEMY OF SCIENCES, *DISPOSAL HAZARDS OF CERTAIN CHEMICAL WARFARE AGENTS AND MUNITIONS* 20 (1984).



**Map of Underwater Munitions Sites and Wrecks off Nova Scotia, Canada**

In the 1970s, governments began to acknowledge that sea dumping “endangers human health, welfare, and amenities, and the marine environment, ecological system, and economic potentialities.”<sup>5</sup> The practice was prohibited by the *Convention on the Prevention of marine Pollution by Dumping of Wastes and Other Matter* in 1972.

However, the 1993 Chemical Weapons Convention *exempts* States Parties from declaring or destroying chemical weapons dumped at sea before 1 January 1985. At the time, sea dumped chemical weapons was not seen as adding to the security of States Parties.<sup>6</sup>

IDUM promotes dialogue aimed at establishing an international legal framework and organization responsible for actively monitoring underwater munitions, promoting environmental awareness, facilitating the exchange of scientific and technical knowledge, and establishing a common, uniform approach to safe removal, disposal, and remediation.

<sup>5</sup> 1972 US Marine Protection Act, 33 U.S.C. §1401 et seq.

<sup>6</sup> Dr. Thomas Stock, *Sea Dumped Chemical Weapons and the Chemical Weapons Convention*, in *SEA DUMPED CHEMICAL WEAPONS: ASPECTS, PROBLEMS AND SOLUTIONS* (2010), p. 52.

## *Our Fish Stocks are at Risk*



Cod fish affected by lesions, Baltic Sea

The toxic effects of underwater munitions negatively affect the marine environment and deplete fish stocks, an essential source of nutrition. This trend will worsen overtime without tangible action.

Chemical constituents leak from munitions in the underwater environment, slowly discharging into the surrounding water and sediment.<sup>7</sup> Fish, marine mammals, and sea birds come into direct contact with chemical warfare materials themselves or through contaminated sediment.<sup>8</sup> The CHEMSEA program identified fish disease in codfish including tumors, lesions and the inability for juvenile cod to reproduce. Chemical warfare agents Clark I and II are being detected in fish and Norwegian lobster in the North and Baltic seas. Degradation products of mustard gas, Clarks and Adamsite are observed in sediments up to several hundred meters away from munitions.<sup>9</sup> Arsenic, which can bioaccumulate in the food chain, placing human health at risk, was detected in the dumpsites at elevated concentrations.<sup>10</sup>

---

<sup>7</sup> Guilherme Lotufo, Gunther Rosen, William Wild, and Geoffrey Carton, *Summary Review of the Aquatic Toxicology of Munitions Constituents*, US Army Corps of Engineers (2013) (“2013 US Toxicology Report”), p. 77.

<sup>8</sup> HELCOM, Report on Chemical Munitions Dumped in the Baltic Sea, Baltic Sea Environment Proceedings No. 142 (2013), p. 83.

<sup>9</sup> Soderstrom, M., Ostin, A., Qvarnstrom, J., Magnusson, R., Rattfelt-Nyholm, J., Vaher, M., Joul, P., Lees, H., Kaljurand, M., Szubska, M., Vanninen, P., Beldowski, J., 2018. Chemical Analysis of Dumped Chemical Warfare Agents During the MODUM Project. Towards the Monitoring of Dumped Munitions Threat (Modum): A Study of Chemical Munitions Dumpsites in the Baltic Sea, 71-103.

<sup>10</sup> Beldowski, J., Szubska, M., Emelyanov, E., Garnaga, G., Drzewinska, A., Beldowska, M., Vanninen, P., Ostin, A., Fabisiak, J., 2016. Arsenic concentrations in Baltic Sea sediments close to chemical munitions dumpsites. *Deep-Sea Res Pt II* 128, 114-122.

## *Our Health is at Risk*

In January 1997, a Polish fishing crew accidentally recovered a lump of mustard gas. The next day, all of the crew members experienced adverse reactions including skin lesions and reddening.<sup>11</sup> More recently in 2013, authorities in Puerto Rico reported that a young tourist was burned after picking up a shell containing white phosphorus.<sup>12</sup> These reported instances demonstrate the serious effect munitions have on human health.



Fishermen face the highest risk of encountering munitions when fishing inside or near former dumping areas.<sup>13</sup> People working in shipping, travel, and energy industries face significant risks as well, particularly when dredging, drilling or building pipelines and wind farms.<sup>14</sup> Marine leisure and recreational activities

may also place individuals at risk of contact with munitions.<sup>15</sup> When the seabed is disturbed, munitions or their components (such as white phosphorus) can explode or migrate with water currents where they can wash up on shorelines and endanger beachgoers and tourists.

---

<sup>11</sup> CHEMSEA, *Results from the CHEMSEA Project – Chemical Munitions Search and Assessment* (2014), p. 19.

<sup>12</sup> Danica Coto, *Tourist in Puerto Rico Injured by Live Munition*, ASSOCIATED PRESS, 33 March 2013, <https://www.sandiegouniontribune.com/sdut-tourist-in-puerto-rico-injured-by-live-munition-2013mar22-story.html>.

<sup>13</sup> HELCOM, *Report on Chemical Munitions Dumped in the Baltic Sea*, Baltic Sea Environment Proceedings No. 142 (2013) (“HELCOM Report”), p. 73.

<sup>14</sup> Offshore construction and maintenance workers run the risk of encountering munitions buried in the sediment and contact with contaminated equipment. Accidental detonations from such activities may also result in injury to marine life from the shock waves produced by exploding munitions. Kim Detloff, Petra Deimer, Ingo Ludwischowski, Hans-Jurgen Schutte, Ulrich Karlowski and Sven Koschinski, *Environmental Nongovernmental Organizations’ Perspective on Underwater Munitions*, 20<sup>th</sup> ASCOBANS Advisory Committee Meeting, AC20/Doc.3.5(S) 11 (Warsaw, 27-29 August 2013).

<sup>15</sup> HELCOM identified recreational divers as a special risk group. 2013 HELCOM Report, p. 79.

## International Scientific Advisory Board (ISTAB)

The ISTAB was originally appointed to IDUM at the request of the Foreign Minister of Lithuania during the 2010 Conference of States Parties of the Organization for the Prohibition of Chemical Weapons. The ISTAB consists of diplomats, scientists, academics, and munitions experts representing more than 10 nationalities. ISTAB members work in their personal capacity and meet twice annually in The Hague, The Netherlands.

The ISTAB provides independent advice on scientific, technical, and organizational aspects in response to sea-dumped munitions and to promote dialogue and multilateral contacts among interested governments and international organizations. The ISTAB seeks new members annually, in particular from regions especially effected by underwater munitions, as well as relevant international and regional organizations.



IDUM received the *Special Editor* award from the Maritime Technology Society (MTS)



## **International Science and Technology Advisory Board (ISTAB) on Underwater Munitions (UWM), The Netherlands**

**Terrance P. Long CPSM. SSM. CD.  
\*Chairman**

Retired Canadian Military Combat Engineer, Canadian Forces School of Military Engineering (CFSME); Master's Project Management, St. Mary's University; Commissioned United Nations Officer (OUN); Explosive Ordnance Disposal (EOD) Canadian Forces School of Electrical and Mechanical Engineering; Improvised Explosive Disposal (IED), Canadian Forces School of Aerospace and Ordnance Engineering (CFSAOE); NATO Advance Improvised Explosive Disposal (IED), United Kingdom British Army School of Ammunition, Felix Centre; Hazardous Materials Technician, Maritime Environmental Training Institute (METI); Advance Combat Intelligences, Maritime Command Atlantic; EOD Centre Chief Toronto; Program Director for Military Munitions Response Programs; Nuclear, Biological, Chemical "Warfare and Defense", Special Services Forces (SSF); United Nations Indigenous (First Nations) Capacity-Building for Mine Actions in Mozambique, Egypt, Sudan, Sri Lanka, Pakistan, Afghanistan, Bosnia-Herzegovina, Croatia, and Kosovo; International Commissions, Scientific and Technology Boards; Chaired International Panel Center for Disease Control (CDC), Atlanta Georgia on Human Health and Environment for Sea Dumped Weapons; Partner, Co-Director and Work Package Leader for "three" long-term European Union and NATO Scientific Programs to investigate Chemical and Conventional Weapons at Sea; Delegate High-Level United Nations Youth Summit, Sustainable Development Goals (SDG) 13 Climate Action Summit, UN Indigenous Leader Summit, and UN Oceans of Communities for SDG 14 Life Below Sea.



**Dr. Thomas Stock, DYNSAFE Germany,  
\*Co-Chairman**

PhD, Chemistry, University Leipzig, 1982; Graduated Chemist, University Leipzig, 1977; Author of several books and more than 120 publications; Dr. Thomas Stock was Managing Director at Dynasafe Environmental Systems since 2002. He performs business development and sales management for munitions destruction systems and containment chambers for chemical and conventional weapons. Dr. Stock has a PhD in

chemistry and is trained as analytical chemist. Dr. Stock has been working as an expert in chemical disarmament and arms control from 1987 to 1996. Between 1988 and 1996 he was researcher and project leader for the Chemical and Biological Warfare Project at Stockholm International Peace Research Institute (SIPRI) in Sweden.



**Dr. Andrzej Jagusiewicz, Co-Chairman**

Former Chief Inspector of Environmental Protection in Warsaw, Poland, Co-Chairman, International Dialogue on Underwater Munitions (IDUM), Chair of three International Treaties. A Polish representative in various negotiating and international political bodies at United Nations-European Commission; CAFÉ Steering Committee; Air Quality Committee and Advisory Council of Global Monitoring for Environment and Security (GMES) Executive Body UNECE Convention on Long-Range

Transboundary Air Pollution and Vice-Chair. Andrej is an expert of United Nations and European Commission (TAIEX), a member of Scientific Committee of the French periodical "Pollution Atmospherique" and numerous publications on various aspects of environmental protection in the era of globalization and regionalization, including the European integration in UN publications.



**Retired, Col. Peter Courtney-Green,  
Consultant in the field of Ammunition and  
Explosives**

- MBE (Member of the British Empire) (1983)
- OBE (Officer of the British Empire) (1987)
- NATO Meritorious Service Medal (2005)

Former UK Officer with first-hand experience dumping of conventional munitions in North Sea and Master Theses for Military War College on Dumping of Sea Dumped Weapons in the North Sea. Peter was an officer in the British Navy responsible for dumping munitions in the North Sea. Commanding Officer of battalion responsible for EOD/IEDD operations in Great Britain in support of the civil police and special forces. Chief Ammunition Technical Officer, United Kingdom Land Forces. Ministry of Defence: in-service manager of guided missiles, rockets and conventional artillery ammunition. Head of Ammunition Branch, Royal Military College of Science design and teaching munitions technology.



**Dr. Jacek Beldowski, Institute of  
Oceanology, Polish Academy of Sciences,  
Marine Chemistry & Ecology**

Jacek Beldowski obtained his masters degree in Marine Biology from the University of Gdańsk in 1998. Since 2000, he has been employed as a researcher in the Polish Academy of Sciences Institute of Oceanography. In 2004, he was awarded his PhD in Earth Sciences, specializing in mercury pollution of marine ecosystems. He has led several Baltic and Arctic expeditions and participated in international research projects with the Institute of Oceanology and the Leibnitz Institute for Baltic Sea Research, Warnemuende. He has been a coordinator since 2011 of the European Union-funded Chemical Munitions Search & Assessment Project (CHEMSEA), dealing with chemical munitions in the Baltic. In 2013 he became the director of NATO SPS project Towards the Monitoring of Dumped Munitions Threat (MODUM), and in 2016 coordinator of EU project Decision Aid for Marine Munitions (DAIMON). Currently he coordinates another EU Project DAIMON2 – Practical Applications.



**Dr. Kela Weber, Associate Professor, Royal Military College of Canada**

Dr. Weber is an Associate Professor in the Department of Chemistry and Chemical Engineering, and Director of the Environmental Sciences Group (ESG), at the Royal Military College of Canada. Kela is a practicing professional engineer and actively engaged in several scientific organizations including the International Water Association, the Canadian Society for Chemical Engineering, the American Chemical Society, and the Society of Wetland

Scientists. Dr. Weber serves as a Board member for the Beatty Water Research Centre in Canada, and is an Associate Editor for the Journal of Military, Veteran and Family Health. As ESG Director Kela serves as a scientific resource and advisor to the Government of Canada through the Department of National Defence, and oversees a team of scientists and engineers tackling contaminated sites challenges across the country.



**MSc. Elisa Perpignan, ISTAB Member**

Elisa Perpignan is a Brazilian biologist with a great interest in everything related to conservation. During her Masters programme at the University of São Paulo, she studied animal behavior in a context of vulnerable habitat. She recently specialized in sustainability by the University of Cambridge, and she is now developing a research at TU Delft in this area. She has been working with science divulgation in zoos, science fairs, and NGOs for more than ten years because she believes increasing public

awareness about underwater munitions.



**Cherylynn Hunt, BSc., MES.**

Cherylynn Hunt graduated from the Royal Military College of Canada with a Bachelor in Applied Science and earned her Master's Degree in Environmental Science and Planning from the University of Waterloo (ON). She served over 27 years as a Canadian Military Engineer as a senior officer and supervised the many trades, professions and consultants required to effect sound asset and environmental management with numerous large-scale projects. She also worked for Public Services and Procurement Canada (PSPC) as a Regional Manager of Engineering Assets and as a Senior Project Manager. Cherylynn is IDUM's Project Manager for IDUM's contribution to DAIMON (Decision Aids for Marine Munitions) and continues to assist IDUM in its tasks to collaborate on international projects.



**James W. Porter, PhD.  
Josiah Meigs Professor of Ecology, Emeritus  
Odum School of Ecology, University of Georgia**

Dr. James Porter is the Josiah Meigs Distinguished Professor of Ecology, Emeritus at the University of Georgia. Dr. Porter received both his Bachelor's and Ph.D. degrees from Yale. He has testified before Congress three times about the effects of (1) climate change on coral reefs, (2) global biodiversity loss, and (3) munitions contamination on Puerto Rican coral reefs. In 2005 he received the Eugene P. Odum Award for environmental education from the Ecological Society of America, and in 2006, he was elected President of Sigma Xi, the Scientific Honor Society. In 2020 in Bremen, Germany he will receive the Coral Reef Society's top Eminence in Research Award. His work has been featured on the ABC World News, NBC Nightly News, and CNN. His documentary film, *Chasing Coral*, to which he contributed as the Chief Scientific Advisor and a Principal Cast Member, won the Audience Choice Award at the 2017 Sundance Film Festival, and then went on to win a 2017 Peabody Award and the 2017 Emmy for Best Nature Documentary.



**Dr. ProJanina Baršienė, Lead Scientist, Head of Genotoxicology Laboratory**

Institute of Ecology of Nature Research Center, Vilnius, Lithuania; Education: M.Sc. – Vilnius University, Department of Botany & Genetics, 1973; PhD – Institute of Cytology, Sankt Peterburg; 1979 Dr. habil. – Institute of Ecology, Vilnius, 1993; 2010 – present – Leading Scientist of the Institute of Ecology of Nature Research Center; 1993 – 2009 – Leading Scientist of the Institute of Ecology of Vilnius

University; 1989 – 1993 – Senior Research Fellow of the Institute of Ecology; 1984 – 1989 – Senior Research Fellow of the Institute of Zoology & Parasitology. Janina has been a member of IDUM's ISTAB from its conception. She has conducted detailed studies that identified impact in the cells of fish from chemical warfare agents, including the resuspension of warfare agents during the laying of oil and gas pipelines on the seabed of the Baltic Sea.



**Dr. Ralf Trapp, Consultant, Chessenaz France PhD, Chemistry, Technical University Merseburg**

Dr. sc. nat., GDR Academy of Sciences Leipzig 1986; 13 years in senior positions at the Organisation for the Prohibition of Chemical Weapons (OPCW); today works as independent consultant on chemical and biological arms control, safety and security; has provided consulting services to international organisations: United Nations, the Organization for the Prohibition of Chemical Weapons (OPCW),

Chemical Weapons Convention (CWC), World Health Organization (WHO). European Commission, government institutions including Spiez Laboratory and the German Foreign Office, and research groups including at the Chemical and Biological Warfare Project at the Stockholm International Peace Research Institute (SIRPI) and the Universities of Bath, Bradford, and Sussex.



## **Dr. Alex Souchen, AMS Postdoctoral Fellow, Trent University**

Dr. Souchen is a military historian who specializes in warfare, society, and the environment, and has been a member of the ISTAB since 2015. He is the author of *War Junk: Munitions Disposal and Postwar Reconstruction in Canada* (Vancouver: University of British Columbia Press, 2020) and several peer reviewed articles on underwater munitions, including one in an open access journal, available [here](#). Several other articles are currently under peer review, including: “Drowned at Sea: Underwater and the Environmental Legacies of War”; “An Exceptional Mortality: Dumped Munitions, Inconclusive Science, and the Mass Death of Oysters in the Thames Estuary after the First World War”; and “Old Dusty Records? The Challenges of Archival and Historical Research on Underwater Munitions.” His latest blog post is available [here](#).

Dr. Souchen received his PhD from the University of Western Ontario in 2016 and held a SSHRC Postdoctoral Fellowship at Wilfrid Laurier University and the Laurier Centre for Military Strategic and Disarmament Studies. He currently holds an Associated Medical Services Postdoctoral Fellowship at Trent University and resides in Kingston, Ontario, Canada.



## **Mr. James Barton, President, Underwater Ordnance Recovery, USA**

Former US Navy Diver and research and development for Underwater Munitions Recovery Technology and independent defence waste policy advisor at Underwater Ordnance Recovery. Jim has over forty-years experiences working on underwater munitions sites and has developed underwater recovery and non-destructive process that includes water-jet technology to remediate sea dumped weapons.

Jim has first-hand experience on the impacts from underwater munitions from providing underwater UXO Responses for the US Navy.



**Dr. Vadim Paka, Russian Academy of Sciences, Shirshov Institute, Institute of Oceanography, Head of Laboratory**

Researcher in Meso- and microscale processes in deep and shallow water, direct measurements; fate of sea dumped chemical weapons. Dr. Paka is a Co-Director for CHSEA (Search and Assessment for Chemical Weapons) in the Baltic Sea; and NATO Science for peace and Security (SPS) MODUM; and DAIMON (Decision Aids for Marine Munitions) in the North and Baltic Seas. 1984 Doctor on Sciences (Physics and Mathematics), Shirshov Institute of Oceanology;

1967 PhD Thesis (Physics and Mathematics), Moscow State University; 1959 Diploma of High School Education (Physics), Moscow State University; Experimental hydrophysics and development of instruments for study of water structure and mixing processes in seas and in the ocean. Management of projects in fields of meso- and microscales dynamics of water; fundamental and environmental application of experimental hydrophysics.



**Tijn van der Zant, PhD., Vice President, IDUM, The Netherlands.**

Dr. van der Zant is an expert in Artificial Intelligence and Social Robotics. During his BSc and Msc in Cognitive Artificial Intelligence at Utrecht University he reprogrammed the Philips soccer robots the first real-time learning soccer robots. Former head of the Robotics Laboratory of Fraunhofer in Sankt Augustin in 2004/5, Germany, for one year before starting a PhD at the Artificial Intelligence department of

Groningen University. During his PhD he pioneered the Deep Learning field using the IBM 12000+ cores supercomputer for his computations. He founded RoboCup@Home in 2006, which became the largest benchmark in Domestic Service Robots and Robot Cognition Nowadays more than 300 laboratories. In 2010 he became the head of the Cognitive Robotics Laboratory at INSERM in Lyon, France. In 2012 he became a professor at the University of Applied Sciences of Windesheim.



**Noah Ameer Al-Malt, Legal Consultant**

Noah Al-Malt holds an LL.M. in Advanced Studies in Public International Law from Leiden University with a specialty in Peace, Justice, and Development. Since 2013, he has worked in international tribunals in Europe and Asia, including the International Criminal Court, the International Criminal Tribunal for the former Yugoslavia, and the Extraordinary Chambers in the Courts of Cambodia. Noah has been engaged with IDUM since 2013. His research has been used as the basis for IDUM's roadmap to establishing an international framework to address underwater munitions and to formulate guidelines for coastguards, marines, and other maritime authorities as part of the MODUM project.

## **Global Cooperation: *Activities and Achievements***



### **International Dialogues**

IDUM has held five *International Dialogues on Underwater Munitions* in Halifax, Nova Scotia ([2007](#) and [2014](#)); Honolulu, Hawaii; Sopot, Poland ([2011](#)); and San Juan, Puerto Rico ([2012](#)). Each dialogue facilitated the exchange of information and best practices for developing science, technology, and policy responses to sea-dumped munitions.

Each dialogue facilitated scientific panels and presentations, assessments of underwater munition sites, research findings from academia and policy experts. The dialogues were hosted in regions specifically affected by underwater munitions to provide local communities and governments a voice to discuss impacts and solutions. A series of meetings following the dialogues allow for attendees to discuss common areas of interest and concern and formulate ideas to develop a common solution.

## United Nations

**Resolution 65/159**: IDUM's ISTAB assisted in the drafting of the first General Assembly Resolution calling for "cooperative measures to assess and increase awareness of environmental

effects related to waste originating from chemical munitions dumped at sea." The Resolution directed the Secretary General to seek the views of Member States on possible modalities for international cooperation to assess and increase awareness of the issue.

**2013 Secretary General's Report**: The Secretary General's report showed wide agreement that international cooperation would be required to assess and increase awareness of underwater munitions.

**Resolution 682/208**: The General Assembly acknowledged the importance of raising awareness of the environmental impact of wastes originating from sea-dumped chemical munitions. Member States and international and regional organizations were encouraged to continue outreach efforts, assess and increase awareness of underwater munitions, and share information through conferences, seminars, workshops, and training courses.



### **United Nations Climate Action Summit, 23 September 2019**

IDUM actively engaged with indigenous leaders to call for greater cooperation on the eradication of underwater munitions. IDUM's calls were met by Indigenous Youth leader, Peter D. Thais, who

presented on underwater munitions following the Climate Action Summit.



## **United Nations Meeting of the Communities of the Ocean Action, High-Level Summit, Incheon, Republic of Korea**

IDUM's chair attended the United Nations Department of Economic and Social Affairs (DESA) organized a Meeting of Communities of Ocean Action, presenting a global overview of sea-dumped munitions and how they negatively affect the outcomes of implementation for Sustainable Development Goals 13 (Climate Change) and 14 (Life Below Water).

The theme of the meeting, held on 30 and 31 May 2019 in Incheon, republic of Korea, was to move forward: *From Commitments to Action: Implementing SGD14*. The aim was to share best practices and experiences among various members of the Communities of Ocean Action and interested stakeholders.

The deliberations of the high-level summit contributed to the preparatory process for the anticipated United Nations Oceans Conference in Lisbon.



**Oceans Action #21356**  
**The Innovative Marine Science & Technology Centre (IMSTC) for the Eradication of Underwater Munitions**

IDUM's [Ocean Action #21356](#) commits to create an *Innovative Marine Science & Technology Centre* (IMSTC) in Cape Breton, Canada to support the implementation of United Nations Sustainable Development Goal 14 (Life Under Water). The IMSTC will serve as a forum for international cooperation in the form of exchange of scientific information and technology, training, and policy solutions for underwater munitions disposal.

The IMSTC will:

1. Collaborate with the United Nations and Member States to develop policy and scientific standards for identification, monitoring, risk assessment, and removal
2. Explore deep water chemical weapons sites, study their impact, and develop responses
3. Raise awareness of the environmental and human health impact of underwater munitions
4. Host annual international dialogues on underwater munitions in affected regions
5. Create a global database of underwater munitions sites
6. Facilitate the exchange of information and technology
7. Develop training programs for marine surveys, investigations, recovery, and munitions disposal
8. Develop shipborne and *in situ* disposal solutions for underwater munitions

The Centre will allow stakeholders the opportunity to host international dialogues in regions affected by underwater munitions, participate in training courses to transfer skills and knowledge, promote international awareness, and provide economic opportunity in coastal communities.



## Organization for the Prohibition of Chemical Weapons

# OPCW

In cooperation with the governments of Lithuania and Poland, IDUM hosted a side event during the Third Review Conference of States Parties to the Chemical Weapons Convention (“OPCW”) in April 2013. At the Third Review Conference, Poland, Lithuania, Bulgaria, and Luxembourg [proposed](#) that the OPCW become a venue for voluntary cooperation on sea-dumped chemical munitions, noting IDUM’s input. The [resolution](#) adopted at the Third Review Conference noted United Nations General Assembly Resolution 65/149, supporting the voluntary sharing of information, awareness, and cooperation.



In 2019, IDUM spoke at the OPCW Conference of State Parties on the state of sea-dumped chemical weapons and the growing concern from the public on the human health and environmental impacts, re-use of abandoned weapons, and other public security concerns.



*This activity  
is supported by:*

The NATO Science for Peace  
and Security Programme



**MODUM**  
TOWARDS THE MONITORING  
OF DUMPED MUNITIONS THREAT

## NATO

**Science for Peace and Security  
Program, Monitoring of Dumped  
Munitions (MODUM)**

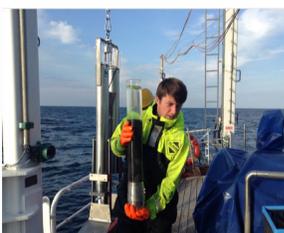
The MODUM project aimed to establish a monitoring network observing chemical weapons dumpsites in the Baltic Sea, using Autonomous Underwater Vehicles (AUVs) and Remotely Operated Underwater Vehicles (ROVs). The project aimed to provide the best available solutions to address the environmental degradation of the Baltic Sea environment. The project included a survey phase to locate objects of concern, a monitoring phase concentrating on the collection of environmental data, and monitoring and habitat evaluation, including fish health studies and modelling of possible threats to adjacent areas.



## Science for Peace and Security, Summer Workshop

MODUM hosted a [summer workshop](#), *Towards the Monitoring of Dumped Munitions Threat*, supported by professors from the Russian Academy of Sciences, Polish Naval Academy, Thunen

Institute of Fisheries and Ecology, and the German Defense Research Department. Students studied several underwater munitions issues, including a historical overview of dumping, ecology, marine biology, analytical chemistry, oceanology, and environmental science. Students planned and executed a survey mission for an AUV, which mapped a portion of the Bedford Basin with side-scan sonar, analyzed those images to determine possible locations of underwater munitions, and used an ROV to take water and sediment samples.



Baltic Sea Sampling



Analysis



AUV Surveyance



NATO Certification



## Decision Aid for Maritime Munitions (DAIMON)

IDUM was an associated partner, co-director, and work package leader for [DIAMON](#), which developed methods, risk assessment tools and a decision support system for the monitoring, management, and remediation of underwater munitions. The DIAMON project identified several locations in the Baltic Sea with contaminated sediments and measured the detrimental effects of underwater munitions on habitat and toxic accumulation.

The DIAMON project demonstrated that dumping war materials (conventional and chemical) caused harm to the Baltic Sea ecosystem. The evidence in exposure was demonstrated via bioaccumulation and the effects at different biological levels (molecular, cellular, tissue, physiological, reproduction, and behavior).

The DIAMON project also included a “Legal Aspects” module providing an overview of international and regional treaties concerning underwater munitions and legal guidelines on their handling directed to coastguards, marines, and other national maritime authorities.

The DIAMON project’s risk assessment module included an assessment of energetic and toxicological properties of underwater munitions. A “Management options” module for monitoring and remediation was developed with a view to developing responses to underwater munitions with new and emerging technologies for surveys, investigations, mapping, monitoring, recovery, and non-destructive disposal of underwater munitions.

# daimon

Decision Aid for Marine Munitions

## **Decision Aid for Maritime Munitions – Practical Applications(DAIMON2)**

**Decision Aid for Marine Munitions: Practical Application** is an international applied-science project consisting of [partners](#) from Poland, Germany, Sweden, Finland and Norway collaborating with experts worldwide, united by the goal of solving the problem of underwater munitions. It is part-financed by the [EU INTERREG Baltic Sea Region Programme 2014-2020](#).

IDUM is one of associated organizations in this project, providing insight in technical solutions and environmental constraints regarding possible munition remediation



## **CHEMSEA Chemical Munitions Search & Assessment**

IDUM is an associated partner, co-director, and work package leader with [CHEMSEA](#), a flagship project of the Baltic Sea Region Strategy. CHEMSEA findings include information on detecting, classifying, and mapping chemical warfare agents in dumping sites in the Baltic Sea; the effects of chemical warfare agents on biota and sediments; as well as contingency plans and guidelines for cases of emergency.



*“The overall conclusion stemming from the CHEMSEA project is that chemical munitions dump sites, although not representing an immediate danger, will continue to be a problem for the Baltic Sea. On one hand, they represent scattered point sources of pollution of unknown magnitude and difficult to control. On the other hand, they are a major economic impairment, making the Baltic Sea a less safe and potentially more costly area for investment.”*

CHEMSEA Handbook



## **Helsinki Commission for the Protection of the Baltic Sea (HELCOM)**

IDUM is an observer and on the Heads of Delegations (HOD) to HELCOM. IDUM is also active in HELCOM sub-committees with the Commission for the Expert Group on Environmental Risks for Hazardous Submerged Objects (SUBMERGED). In past years IDUM also cooperated on the Ad Hoc Working Group on Sea Dumped Chemical Weapons, which was conceived from discussions at the Third International Dialogue.

The Ad Hoc Working Group completed a three-year report on sea-dumped chemical weapons in European waters with experts from several European Countries and Canada. The Commission has and continues to cooperate with IDUM to further understand the impacts of sea dumped chemical and conventional weapons in the Baltic Sea. HELCOM conducted a Commission in Sopot, Poland in cooperation with the Third International Dialogue, allowing members of the commission and dialogue delegates to network on underwater munitions.



**OSPAR  
COMMISSION**

**OSPAR Commission for the  
Prohibition of the North-East  
Atlantic Oceans**

IDUM is an observer and on the Heads of Delegations (HOD) for OSPAR Commission for the Protection of the North-East Atlantic Oceans. IDUM has presented on sea-dumped weapons at the commission on both the HOD and Ministers Meeting. IDUM is active on the Offshore Industry Committee (OIC), which cooperates with marine industry including, shipping and oil and gas on regulars for CO2 emissions.

IDUM is also active on the Environmental Impacts of Human Activities Committee (EIHA), where Marine Litter, Underwater Noise, Offshore Renewables, Shipping and Ballast Water, Dredging and Dumping, Dumped Chemical and Conventional Munitions, Fisheries, Maricultural and Other Human Activities are discussed with States in the context of ocean protection.



## **International Seabed Authority (ISA) for Law of the Sea**

IDUM is an observer and on the Head of Delegations (HOD) for the International Seabed Authority (ISA) for Law of the Sea, for the exploration of enriched and rare minerals. IDUM is actively involved with the ISA Unofficial Working Group for the development of the environmental framework for exploration in the Mid-Atlantic Ocean between Nova Scotia and Ireland, where ten million square miles of the seafloor will be excavated to mind enriched minerals. In 2020, IDUM Chair Terrance Long attended events in Hamburg, Germany hosted by Deep Green and the government of Germany.

IDUM continues to cooperate with the ISA on the exploration of enriched and rare minerals by addressing the risk and developing mitigation steps for deep water chemical and radiological weapons sites in the Mid-Atlantic in the environment framework, hosted by Deep Green in San Diego, California in February 2020.

## Public Awareness

IDUM continued to develop public awareness by promoting international award-winning documentaries featuring IDUM's efforts in regions where dumped munitions are impacting declining fish stocks and the health of corals reefs.

**[Footprints of War](#) (Natur unter Betchruss), *Environmental Impact of Military Conflict from World War Until Today (Awards for Environmental Excellence)*. Military attacks have alarming consequences on our ecosystems. Militaries have a huge global footprint around the globe, contaminating the ocean and landscapes. Military attacks account for for 10% of global carbon emissions. The United States Navy carried out mass dumping operations on a global scale: the dumping of 130 tons of nuclear weapons loaded on LSH 519 from Calhoun County from the US Naval Magazines dumping of Newfoundland in eastern Canada.**

**[Deadly Depths](#), ATRE France, (2015 Best International Documentary and Blue Ocean Finalist) “Deadly Depths”** IDUM founder and munitions expert, Terrance P. Long brings together organization on a global scale to address millions of tons of chemical weapons dumped into the sea, visiting regions affected by sea-dumped chemical weapons and addressing the Conference of States Parties of the Organization for the Prohibition of Chemical Weapons.

**[Baltic Sea Bomb Hunters](#), NATO TV (IDUM – Scientists in Baltic Sea to Investigate Chemical Weapons)**. An international team of scientists working on the multi-year research project ‘Towards the Monitoring of Dumped Munitions Threat’ (MODUM), supported by NATO’s Science for Peace and Security (SPS) Programme.

**Menaces en mer du nord (Menace in the North Sea), RTBF France (Chemical Weapons in the North Sea)** Dumping of millions of tons of chemical and conventional munitions in the North Sea. The documentary discusses the North Sea sites as well as the potential for remediation of some shallow water chemical warfare sites that impact on human health and environment.

**Canada Over the Edge, Canadian Broadcasting Corporation, (Munitions dumped in the Bras d'Or Lake)**. The documentary focuses on Terrance Long's claims that there are chemical and conventional munitions sites in the UNESCO Protected Biosphere of Bras d'Or Lake. Ten years after the documentary, the Canadian Department of National Defence confirmed that there are munitions sites in the lake, documented in an Access to Information Request by Terrance Long.

## Funding

IDUM is challenged by shifting funding priorities and increasing competition for fewer resources and expertise. We conduct our activities in a transparent and cost-effective manner to ensure that the funding we receive from our donors leads to measurable results. We increasingly coordinate activities with relevant international partners to avoid mission duplication and gaps.

IDUM is a non-profit foundation and does not receive direct funding or subsidies from any institution. Funding comes from international grants for specific projects IDUM participates in, featured donations for joint activities conducted with international donors, and training and educational activities.

International partners and donors are invited to make voluntary contributions and offer support in-kind to help IDUM further its mission in introducing environmentally safe and secure solutions for all stakeholders, locally, nationally, regionally, and globally.